

The Maryland Fruit Grower



July, 1935



Maryland State
Horticultural Society

UNIVERSITY OF MARYLAND EXTENSION SERVICE

College Park, Maryland

July 13, 1935.

English Fruit Report

The Foreign Market Cable of July 5, released by the U. S. Bureau of Agricultural Economics states that the British Ministry of Agriculture reported in late June, a patchy crop of fruit, with a short total crop, Apples, pears and plums are reported generally as "Variable, small crop".

Pennsylvania Meeting

Growers desiring to go to State College, Pa., on July 29 and 30, will find a room reservation committee at the Horticultural Building, Room 1, Penn. State College, from 1 to 10 p. m., July 28, and all day July 29. Rooms are available in homes or hotels, from \$1.00 up. You may camp on the Hort. Farm if you like. State College is on U. S. 322 and Pa. Route 45.

The July 29 program beginning at 10:00 a. m., deals with orchard inspection and discussion of Apple Fertilizers; Culture and Cover Crops; Organic Matter and Nitrogen; Orchard Work in Disease and Insect Control; Fruit Tree Stocks. The evening meeting will consider Residue Removal; and Enforcement of Residue Regulations.

A half-day meeting on July 30 beginning at 8:00 a. m., takes up Fruit Varieties and Filler Tree Management, and allows time for inspection of exhibits, etc., but there will be opportunity to inspect the orchards and experiments.

An account of the New York trip to be made following the Pa. meetings is contained in the July "Maryland Fruit Grower".

Pennsylvania reservations may be made by writing F. N. Fagan, Dept. of Horticulture, State College, Pa., stating number of persons, time wanted, rate desired and whether in hotel or private home. Reservations for the New York trip should be made with R. H. Sudds, Dept. of Horticulture, State College, Pa.,

Apple Washing

If interested, write for N. Y. Bulletin 604, "Removal of Lead and Arsenic Spray Residues from New York Apples". Published by Cornell University Agricultural Experiment Station, Ithaca. N. Y. A good bulletin.

The meetings at State College are under the direction of the Horticultural Dept. of the College. The tour through New York is the summer tour of the Pennsylvania Horticultural Association (Society).

Crop Prospects

The Maryland apple crop prospects are still a little uncertain. Some orchards and some sections are showing variable sets, and even then, varieties are showing spotty conditions. The Hancock-Smithsburg section is about the most uniform, with generally good set and clean fruit. It is worth a trip to that section to observe the excellent condition of the orchards. There is

probably a 70% crop up there; at least much more fruit than last year. The central part of the State shows considerable scab and rather spotty set, but more fruit than last year. Eastern Shore has a good crop of early apples, and reports a good prospect of late apples, though scab is a factor in some orchards. Possibly a 65% crop estimate for the Shore would be a fair average.

Generally Stayman is the best set, York is good, and Grimes, Jonathan, Rome and Delicious about medium, though spotty conditions may show heavier set. Black Twig has set rather well.

Codling moth has not been serious so far, and its future damage is a question. However, the moth sprays have not been a waste.

The July 1 condition report of the U. S. Bureau of Agricultural Economics estimates the total United States apple crop as over 40% above the July 1, 1934 condition estimate, and estimated production about 40% higher than the 1934 total crop. Summer and early fall apples show better prospects than late apples. The July 1 condition reports show Maryland 1934 - 29%; 1935 - 56%; Pennsylvania 1934 - 38%; 1935 - 63%; W. Va. 1934 - 27%; 1935 - 53%; Va. 1934 - 28%; 1935 - 56%. Scab, blotch, moth and rust will cut rather heavily into the final crop of good apples in the various states. Washington and Oregon report about the same prospects as of last year, and possibly less, due to decreased prospects of Delicious apples.

Peaches - Maryland's peach crop prospects are about as reported last month. The July 1 estimate of the U. S. Bureau of Agricultural Economics shows 51% crop condition, compared to 12% on July 1, 1934. The crop is clean and sizing nicely.

The total U. S. crop condition is estimated at 9% above the July 1, 1934 estimate. The Georgia crop needs rain for size, and the Carolina crop could stand some good showers.

Condition estimates of nearby states show: Va. 1934 - 22%; 1935 - 39%; W. Va. 1934 - 7%; 1935 - 24%; Pa. 1934 - 15%; 1935 - 61%; N. J. 1934 - 2%; 1935 - 40%; Del. 1934 - 18%; 1935 - 50%.

Pears - The Maryland crop shows 53% condition against 35% in 1934. The U. S. crop shows 55%, a decrease of about 7% under 1934.

Grapes - Maryland condition is about 1% higher than on July 1, 1934. Total U. S. crop shows about 6% increase. Black rot is showing up rather badly in Maryland and this disease is serious if it gets a good start.

Remember, this is not a crop report, but an estimate based upon reports from growers, with some personal observations added.

A. F. Vierheller,
Extension Horticulturist.

The Maryland Fruit Grower

Published Monthly by the Maryland State Horticultural Society

Edited by the Secretary, A. F. Vierheller, Extension Horticulturist

Vol. 5

July, 1935

No. 7

SOME CULTURAL CONDITIONS INFLUENCING THE MANUFACTURE OF CARBOHYDRATES BY APPLE LEAVES

A. J. Heinicke, Cornell University, Ithaca, N. Y.

As every fruit grower knows, a large leaf surface is needed for the development and maintenance of a good bearing surface and for the production of heavy crops of high quality fruit. The leaf surface is indispensable since it provides the materials used for building shoot and fruit tissues and for furnishing energy for the growth process. Of course, fertilizer elements such as phosphorus, potassium, nitrogen, and many others are also essential for growth and fruiting, and such nutrients must be applied if lacking in the soil. The green plant, however, provides its own food such as starch, sugars, and related materials which are built up in the leaf from the chemical elements found in water and air.

If we are interested in the possibilities and limitations of our cultural treatments it is important to know how the leaf surface functions under different weather conditions, as, for example, on cloudy days or in periods of drouth or unusually high or low temperatures. We need to know also how the activity of the foliage in respect to food manufactured will be influenced by such factors as soil conditions, fertilizers, spraying, pruning and fruiting.

The Structure of the Leaf

It might be well to recall at the outset some of the facts about the structure and function of the leaf, with which you are more or less familiar. The leaf consists of a thin green blade supported by a network of veins or ribs which unite to form a midrib. The leaf is attached to the stem by means of the petiole which is an extension of the midrib.

A cross section of a small part of the leaf is shown on the chart. If an entire leaf were enlarged as much as the small section shown on the chart it would be about 240 feet wide and 360 feet long. The interior of the leaf blade is composed mainly of a large number of cells, most of which contain many small green bodies. The material in these bodies gives the leaf its characteristic green appearance and is known as chlorophyll, or leaf color. Chlorophyll is responsible for the peculiar power of the leaf to build up carbohydrates from raw materials contained in air and water. The energy for the chemical changes involved is furnished by sunlight and the process is called photosynthesis.

The large cells just beneath the upper surface and at right angles to it are arranged parallel to one another, and they form the palisade layers. The cells just above the lower surface of the leaf are loosely arranged and provide a relatively large amount of air space. The veins and midrib shown in the cross section are made up of the conducting tissues which supply the leaf with water and also permit the elaborated food to be removed from the leaf blade of the stem.

The entire leaf is covered by a thin layer of cells which forms a kind of skin. On the underside of the leaf there are many openings through

this layer. These openings, called stomata are extremely small, and an average leaf may have about $1\frac{1}{2}$ to 2 million. The size of these openings can be adjusted by the leaf at different times of the day. As a rule the stomata are closed at night, and they are wide open early in the morning. They seldom remain open all day long, however, and when the weather is hot or dry they may be closed 2 or 3 hours before noon. The adjustment of the size of the opening is governed by delicate physical chemical reactions between the guard cells and adjoining epidermal cells, and it is also influenced by the available water supply. When there is a water deficit the stomata tend to close very early. So long as the stomata are wide open water vapor escapes freely, but water is conserved when they are closed.

Since the stomata afford a direct opening between the interior of the leaf and the surrounding air they are of special importance in the process of photosynthesis. Relatively large amounts of air can still pass in and out of the leaf even though the stomata are only partly open, but when they are closed tightly free movement of air is inhibited. An abundant supply of air is required for photosynthesis, since it provides the carbon dioxide which is one raw material used in the process.

By determining the composition of air before and after it leaves a closed chamber containing the leaf surface, and if we know how much air has been supplied, we can calculate the rate of photosynthetic activity of the leaf at any hour of the day. This rate is conveniently expressed in terms of the milligrams of CO_2 removed per hour per 100 cm^2 of leaf surface. A mature apple tree can manufacture about a pound of food per hour if its leaf surface is functioning at a normal rate of about 10 mg. per hr. per 100 cm^2 , or about 1 oz. per 300 sq. ft. of leaf surface. To manufacture this amount of food would require all the carbon dioxide found in about 65,000 cubic feet of air, since the normal atmosphere contains only about 3 parts in 10,000 of air. Normally, however, less than 20% of the available carbon dioxide is removed by the leaf, so it really would require something like 300,000 cubic feet of air per hour to furnish the raw material needed by a mature apple tree. Fortunately, there is an unlimited supply of free air.

Some Factors Influencing the Rate of Photosynthesis

There is considerable difference in the rate at which the foliage from a given tree removes carbon dioxide from the air at different hours of the day and on different days during the growing season. Some of these differences are clearly associated with weather conditions.

As a rule the leaves are most active on bright, clear but cool days, and they are least active when there are heavy clouds. For example, the average rate of carbon dioxide assimilation on five cloudy days was 5.2 mg. per hr. per 100 cm^2 , just about $\frac{1}{4}$ as much as the average rate shown by the same leaves on clear days. During the middle part of a clear day there is more light than the leaf needs, but on a cloudy day there is usually not enough light to carry on maximum activity. The occurrence of a number of dull days in succession during a critical period in early summer might well be a determining factor in bringing about a set of internal conditions in the tissues of the tree that would profoundly influence the type of vegetative growth or the initiation of flower buds for next year's crop.

As a rule the leaves manufacture about 10-20% more food in the morning than they do in the afternoon hours, provided the morning is clear. This difference is especially noticeable on hot days when the sun is shining brightly.

During such periods water is lost more rapidly from the leaf than can be replaced rapidly. Water thus may easily become a limiting factor and the stomata will tend to close.

The conservation of soil moisture by the use of a heavy straw mulch or by the destruction of grass or weeds, and the practice of irrigation in exceptionally dry weather will help to provide a good supply of water in the soil. However, before the soil moisture can get into the leaf tissues it has to be taken up by the root system and transported through the conducting tissues of the trunk and branches. If the water is to be removed from the soil rapidly by the tree there must be a large root surface in contact with the moist soil particles. Furthermore, there should be a thick layer of sapwood in the trunk and branches so the movement of the water will not meet with too much resistance. Where such favorable conditions for water supply to the leaf exist, the water shortage will not appear as early in the day as under unfavorable conditions. The stomata will remain open several hours longer each day and the leaf surface will be more efficient in producing food. Where the root system is confined to a shallow layer of soil close to the surface, or where the trees have made a weak vegetative growth, the foliage may frequently suffer for water even though the soil is fairly moist.

Apple leaves are likely to be more active in photosynthesis during the relatively cool days of early spring and late fall than during the very hot days of midsummer. While the high temperature in itself may be injurious to the leaf tissues, it probably exerts its greatest influence through its effect on transpiration. The loss of water from the leaf on cool days is only a small fraction of that lost when the atmosphere shows a high evaporating power.

The leaves on different trees and on different parts of the same tree may show a marked difference in their ability to manufacture food. Generally speaking, the darker green leaves are the most efficient in manufacturing food; e. g. an average of 50 determinations with light green foliage indicate a rate of 4.1 mg. per hr. 100 cm² while the dark green leaves at the same time showed an average rate of 12.1 mg. hr. 100 cm².

The color of the leaf, as you know, may be influenced by the nitrogen supply. Where nitrogen applications cause the foliage to be darker green

BE PREPARED

LOOK OVER YOUR PICKING EQUIPMENT NOW
PROPER EQUIPMENT MEANS LESS BRUISED FRUIT

Let us quote prices on our full line

—of—

WELLS AND WADE PICKING BUCKETS
PICKING BAGS — LADDERS

Complete Stock of Packing Materials and Supplies

LUPTON ORCHARD SERVICE COMPANY
PHONES 1100-1101 WINCHESTER, VA.

it also brings about a marked increase in the efficiency of the leaves in producing more food. For example, before applying fertilizer the average rate of two similar trees was 10.6 and 9.8 CO_2 mg. hr. 100 cm^2 respectively. Two to three weeks after fertilizer was applied to tree A with B remaining as a check the rates were: for A, 12.8 mg. CO_2 hr. 100 cm^2 and for B, 9.9 mg. CO_2 hr. 100 cm^2 , and 2 months later A produced 17.7 mg. CO_2 hr. 100 cm^2 , and B, 7.9 mg. CO_2 hr. 100 cm^2 .

Light green foliage may also be caused by soil conditions unfavorable for extensive root development or by injuries to the different parts of the tree. Any cultural condition which results in a dark green color until the end of the season, enables the leaf surface to function to its fullest capacity whenever weather conditions are favorable. Photosynthesis may be carried on until the day before the leaves are frozen if the leaves remain green.

The efficiency of the leaf depends also upon the rate at which the food is utilized by other parts of the tree. If the food is not used for shoot growth or for fruit development, it tends to accumulate in the leaf blade and as a result there is a reduction in the rate of photosynthetic activity. Such an accumulation of food is also caused by ringing. The leaves on ringed branches produce only about 30-50% as much food per given area compared with foliage on normal branches. As the leaves grow older they likewise tend to lose their efficiency in manufacturing food.

Certain spray practices may have a profound influence on the ability of the leaves to manufacture carbohydrates. Under certain conditions leaves sprayed with lime sulphur may reduce the efficiency of the leaf to a considerable extent. For example, the average rate before spraying in two lots of comparable trees was 32.8 and 33. mg. CO_2 per hr. 100 cm^2 respectively, for A and B. Two days after spraying with lime sulphur 1 to 40, lot A was only 53% as active as the unsprayed lot B. This reduction may occur even though there is no visible burning or injury of any kind. The amount of reduction in the efficiency of the leaves by lime sulphur depends largely upon the condition of the foliage at the time it was sprayed, as well as upon the temperature and water supply to the tree. A weak tree growing on poor soil is particularly susceptible during hot, dry weather and may show as much as 90% reduction. Trees that have dark green foliage show a 10-25% reduction. Some oils used for summer spraying may have a similar influence in reducing photosynthesis. Certain wettable sulphur sprays such as dry mix and some dusts apparently have no influence on photosynthesis. They are usually not the most effective fungicides or insecticides. No spray material has been found which increased the efficiency of the apple leaves above normal.

Spraying, of course, is necessary because in all likelihood the diseases or insects would cause a much greater loss of food to the tree. Obviously, any injury which eliminates a part of the leaf surface would tend to reduce the total amount of food that could be manufactured. It is important, however, that those who are concerned with the development of our spray practices should keep in mind that while the spray material must be effective in controlling insects and diseases without causing obvious spray injury to the fruit or foliage, it is also necessary that the materials should not interfere with the proper functioning of the leaf. The invisible spray injury may influence the crop by retarding the development of size or the color and quality of the fruit, and in some cases by aggravating the tendency toward alternate bearing.

In this discussion the object has been to call attention to the important

function of the leaf in building up carbohydrate food, which is fundamental in the growth and fruiting of the tree. Practically all of our cultural practices may have an influence on the ability of the leaf to provide additional food. It must be recognized, however, that the weather conditions may have an even greater influence in determining the rate of photosynthesis. Our cultural practices should favor the development of a large leaf surface early in the season and to keep this surface supplied with water and nutrients so it can work efficiently whenever the weather conditions permit.

THAT PENNSYLVANIA MEETING

There will be a two-day meeting of fruit growers at State College, Pa., on July 29 and 30. Maryland growers are invited to attend one or both days. The meetings will center around the Penn State College orchards. This is a trip you'll like. Then on July 31, the Pennsylvania growers will go to Geneva, N. Y., Experiment Station, also to Niagara Falls to the Cyanamide factory and to Vineland (Canada) Experiment Station. The trip lasts from Wednesday, July 31 to Saturday, August 3, inclusive.

Mr. R. H. Sudds, Secretary, Pennsylvania State Horticultural Association, State College, Pa., will be glad to know as soon as possible, if you intend to go along.

ORCHARD IRRIGATION

Some Maryland growers were greatly interested in orchard irrigation during the summer. It is a problem to be approached with much care, study and caution. So far as it known, but one orchard in Maryland was irrigated during the past summer, the water being pumped through the stationary spray lines.

After the 15 to 16 inches rainfall of September, probably the irrigation question has been forgotten, but the September 1934 News Letter of the Ohio State Horticultural should be of interest. In reporting the Summer Meeting of the Society at Ohio Orchards, Milford Center, Ohio, (C. E. Dutton, Manager), the Secretary, Mr. F. H. Beach writes:

"Of special interest was the irrigation equipment which has been developed during the past four years, under the skillful guidance of Mr. Dutton. From a small beginning in 1930, the irrigation system is now developed to supply water to approximately 125 acres of orchard. The main irrigation plant is on the bank of Darby Creek, where a three-inch centrifugal pump is driven by a 1924 Reo Speed Wagon Motor. This pump delivers about 400 gallons per minute when operated at 1900 R. P. M. A 6½ inch pipe leaves this pump and divides into a network of about 9000 feet of mains and laterals, varying in size down to about 2½ inches which places the water on all high ground. Double outlets of 2 inch pipe nipples are taken off as necessary to spread the water through sprinkle hose. Because the drouth of the past spring and summer did not permit enough water to be pumped from Darby Creek, three wells were driven to supply additional water to the east portion of the orchard. Fortunately, the water level in these wells permits pumping with a two-inch centrifugal pump placed at the surface, which pumps simultaneously from the three wells and delivers about 75 gallons per minute. Mr. Dutton's first experience in spreading water in 1930 was with flood and furrow irrigation. Due to the rough topography of the orchard which made it almost im-

possible to apply water uniformly in this way, this system was abandoned in favor of the porous hose method. While the porous hose was superior to the flood and furrow system, it did not place water evenly and during the past summer, Mr. Dutton developed what he calls "sprinkle hose", which has many advantages over the porous hose for orchard irrigation. This hose is constructed of water-proof canvas $2\frac{1}{2}$ inches in diameter. At 2 ft. intervals shoe eyelets have been placed in the hose to give alternating jets of water. This places the water uniformly over a considerable lateral distance on each side of the hose. Where considerable pressure has been used, these jets have delivered water up to 20 ft. on each side of the hose. This summer they were placed along the tree rows and water was distributed beneath the branches. In the past, muddy creek water had caused considerable clogging of porous hose and had also deteriorated the hose rapidly. At present, it appears that the sprinkle hose will be longer lived as well as working more satisfactorily over uneven land and giving better distribution of the water. Irrigation is responsible for the present splendid vigor of this orchard which, otherwise, would have experienced a devastating drouth this summer. Best results were noticed on the apples where heavy irrigations were given frequently enough so that the fruit never stopped growing. Irrigation attracted unusual interest and firms selling irrigation equipment were besieged by growers interested in getting information on irrigation layouts.

"Mr. Dutton put on a spraying demonstration with their new 50-gallon per minute spray pump which is mounted on a Ford truck. The outfit sprayed at 600 pounds pressure. He first demonstrated how the early season's applications for scab control were made. Here he used a large spray gun, from the top of the rig to get the tops of the trees, and a second spray man with a cluster nozzle assembly covered the lower portions from a low deck in front of the truck. He then demonstrated his spray method when trees were in full leaf and apples must be covered all around for codling moth control. One spray man worked from the top of the truck and another worked from the ground with a cluster nozzle assembly to get the inside of the trees and to cover the fruit from all angles. The old elevated water supply tanks are now connected with the irrigation lines so that the irrigation outlets can be used to refill the sprayer at any point in the orchard.

"Since 1925 the orchard has been handled with cultivation and cover crops and short sod clover rotations. Lime and superphosphate have been used to provide satisfactory conditions for growing cover crops and clover. Sulphate of Ammonia has been used at from 4 to 6 pounds per tree—one-half being applied in the fall and the other half in the spring. During the past ten years the orchard has produced 327,500 bushels of apples which is an average of 363 bushels per acre per year for the 90 acres of producing orchard. The balance of the orchard is young with some showing its first crop this year.

"The orchard has storage capacity for about 25,000 bushels of apples and plans are under way to install cold storage machinery in two rooms which will accommodate about 8,000 bushels in order to prolong the handling time for such varieties as Wealthy, Jonathan and Delicious.

"Dutton has been very successful in developing retail trade at the orchard and usually one-third to one-half the crop is sold from the farm storage. Advertising is conducted intensively in the territory fifty miles west, north and south of the orchard in which territory there is little competition from other commercial growers."

ADVERTISING

The Meat and Live Stock Digest has estimated that Americans eat annually 419 million pounds of frankfurters per year: that means 400,000 miles of wieners or enough "hot dogs" to reach 16 times around the earth. What about apples? Lots of talk about foreign markets slipping; figures to show that apple and peach production is stationary; that oranges, grapefruit and bananas are on the increase; that each person is eating less apples.

The March, 1935 News Letter of the Illinois State Horticultural Society reported that the consumption of apples per person in 1930-34 was 58 pounds. In 1899 each person averaged 112 pounds of apples per year. Oranges have increased from 19 pounds per person, in 1899, to 31 pounds in 1930-34. Grapefruit came from 0 to 9 pounds, peaches from 10 to 20; pears from 4 to 9; grapes from 17 to 32 pounds in the same period of years from 1899 to 1934.

Do we need to advertise? Some folks seem to think so. Probably many growers are disappointed in the "Apples for Health" advertising of a few years ago, but let's see what's going on around us.

"Virginia Fruit", June, 1935 reports that Virginia and West Virginia Horticultural Societies have appointed committees and are laying plans for getting publicity through movies of apple packing or of some famous athletes or other persons receiving a basket of apples; by radio, newspaper and magazine ads. The advertising is to be financed by growers' voluntary subscriptions at the rate of $\frac{1}{2}$ cent per packed bushel of U. S. No. 1 or better, for the 1935 crop. Each state is to contribute proportionate amounts on the basis of the five years' average crop. The idea is to invite other states to join the movement, to represent the Eastern and Midwestern apple growers.

The West Virginia "Mountaineer Grower", June 1935, also suggests the use of a better quality graded pack, all through, using tub bushels with crown lids and cushion pads, as a uniform West Virginia pack. This would add to reputation of pack, and create better demand, but would not create the additional use of fruit that advertising would stimulate.

To test the sentiment regarding advertising, the American Pomological Society called a growers' meeting at Fort Wayne, Indiana, May 18. Five State Horticultural Societies were represented, and some plans of organized advertising were decided upon. From this meeting the National Apple Institute was formed and incorporated, under the laws of Ohio. The organization is to advertise apples nationally, by use of news features, rather than by expensive advertising.

The means to be used are as follows: contacts with bakers, canners, restaurant men, hotels, grocers, etc., to stimulate discussions of fruits at their conventions; cooperative advertising with other industries, such as milk dealers, honey and breakfast food manufacturers, etc.; promoting new interest in National Apple Week and local fruit displays; issuing apple recipe booklets through Horticultural Societies.

To do these things a \$7,200 budget has been decided upon. The Secretary is H. E. Barnard, 225 Wimmer Bldg., Indianapolis, Indiana; Treasurer, Harry D. Simpson, Orchardist, Vincennes, Indiana. The Directors, nine in number, are fruit growers from Missouri, Ohio, Indiana, Michigan and Illinois.

The financing of the organization is to be done by voluntary grower

contributions of any amount, preferably on the basis of a tenth of a cent per bushel of the growers' 1935 estimated production. The Horticultural Societies will be asked to contribute \$100. In case of a surplus the Institute hopes to refund \$50 to the Societies, *if* the growers in that State have also contributed at least \$100.

Of course, there is some skepticism of the plan, the argument being that each grower should do his own advertising, especially on the backs of his letter envelopes, in local papers, and in his packed fruit.

There is no question but that the apple should be advertised. The public needs to know more about the goodness of the apple. They have certainly heard plenty about the badness of arsenic and lead. One Maryland grower is spending from \$300 to \$500 a year on newspaper ads, and is getting results. The big question is whether the advertising should be "Maryland" or "Virginia" apples, or "Eastern Apples" or just "Apples". The next question regards proper financing. It is not fair for a small group to carry the advertising of the rest of the fruit acreage.

The question of joining the National Apple Institute will be referred to the Executive Committee of our Society. Possibly we will be requested by the Institute to ask growers to contribute to the fund. In any event, the matter will be left to the growers, and will be entirely voluntary and their own personal affair.

SEASONAL ACTIVITIES OF CODLING MOTH AT HANCOCK, MD., 1935

C. Graham, Assistant Entomologist

The activities of the first brood Codling Moth in the Western part of the State have been greatly retarded on account of cool weather. The emergence of the first brood began eight days later than in 1934. Egg deposition was delayed even more due to the low temperatures in the early evenings and nights during May and June.

The first moths emerged at Hancock on May the 24th. The first peak was reached May the 28th with a larger one occurring on June the 14th. The end of emergence of the first brood moths will occur around July the 15th.

The peak of egg laying was reached June the 30th. This does not correspond with the peak of moth emergence, which is explained by the low temperatures during the early evening at which time egg deposition usually takes place; in other words, a few moths under favorable conditions will deposit more eggs than a large number of moths under unfavorable conditions.

The second brood worms in this section usually begin to hatch around July the 12th to the 15th, but the delayed activities of the first brood moths this year will delay the hatching of the second brood moths until July the 25th to the 30th.

For the past several years in Western Maryland a partial third brood of moths began to emerge around August the 15th and caused considerable injury to the late fruit, but with the retardation of the first and second broods, the third brood, if any, will emerge too late to do any appreciable harm.

The codling moth infestation up to the present time is light. The late hatching of the eggs gave the grower the advantage in that the foliage was all grown and heavily covered with poison when the worms first began to appear in the orchard. The grower who has sprayed thoroughly and timely up to July the 15th has an exceptionally clean crop up to date.

Pratt's New Improved Summer Scalecide

Increased Toxicity with Safety

Better Codling Moth Control

Summer Scalecide has many advantages in codling moth control. It can be used immediately before or after sulfur applications. It is safe. It is effective. It is priced lower than other summer oils. It combines with nicotine or arsenate of lead for first or second brood codling moth.

If you do not wash your fruit, new improved Summer Scalecide makes it easier to brush off arsenate of lead. If you wash, new improved Summer Scalecide allows the arsenate of lead to come off as easily as if you used no summer oil at all.

Write today for new spray program "Summer Scalecide."

B. G. PRATT SUGGESTS A NEW BROWN ROT SPRAY

Retard Decay with this

Picking Time Spray

On Peaches, Cherries, Berries and other perishable fruit, this spray not only stops decay in transit but greatly increases the carrying and keeping qualities of the fruit.

Directions—From 1 to 3 days before picking, spray with $\frac{1}{2}$ gallon Sulfocide and $1\frac{1}{2}$ pounds of any good odorless soap to 100 gallons of water.

This spray covers the fruit with a film of sulfur so fine as to be practically invisible, when dry it is tasteless, odorless and perfectly harmless. Lime Sulfur or dusting sulfur will not do this work. Write for new circular "Picking Time Spray."

B. G. PRATT COMPANY

50 Church Street

Dept. "F"

New York, N. Y.